

Abstract

Field effect transistor with suitable source, drain and channel materials and integrated circuit comprising same

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The normally on transistor comprises a source (10), a drain (11) and a channel (7). The source, drain and channel materials are chosen such that, for a NMOS type transistor, the electronic affinity X_d of the drain material is lower than the electronic affinity X_c of the channel material and the electronic affinity X_s of the source material is higher than the electronic affinity X_c of the channel material ($X_d < X_c < X_s$). Moreover, the materials are selected such that, for a PMOS type transistor, the upper level E_d of the valence band of the drain material is higher than the upper level E_c of the valence band of the channel material and the upper level E_s of the valence band of the source material is lower than the upper level E_c of the valence band of the channel material ($E_s < E_c < E_d$).

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(Figure 5)